

Enhanced *in vivo* diagnosis of cancer with multiple tumor targeting peptides presented
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In this study, for enhanced cancer targeting, human ferritin heavy chain nanoparticle (hFTH) is engineered to present tumor-binding peptides(RGD-derived cyclic peptide (4CRGD) and/or affibody) on its surface. Affibody strongly binds to epidermal growth factor receptor 1(EGFR) and 4CRGD binds to human integrin $\alpha v \beta 3$ that are overexpressed in various cancer cell lines.

First through *in vitro* study with EGFR-overexpressing breast cancer cell(MDA-MB-468) and integrin-overexpressing glioblastoma cell(U87MG), it is shown that for active cancer targeting, specific interaction between receptor on tumor and tumor receptor binding peptides is important. After labeling these particles with the near-infrared fluorescence dye(Cy5.5) and intravenous injection into MDA-MB-468 or U87MG tumor-bearing mice, the recombinant hFTHs that present each tumor-targeting peptide or both peptides are successfully delivered to cancer and showed prolonged retention in cancer. And for heterogeneous receptor expressing tumor(U87MG), the recombinant hFTH presenting both affibody and 4CRGD notably enhances *in vivo* detection.